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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SODERQUIST, ARLEN

ART UNIT PAPER NUMBER

1743

DATE MAILED: 09/10/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/759,265

Applicant(s)

BOCKEL-MACAL ET AL.

Examiner

Arlen Soderquist

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 35,37-55,59-64 and 66-68 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 35,37-55,59-64 and 66-68 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. Applicant is advised that should claim 67 be found allowable, claim 68 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).
2. Claims 35, 37-55, 59-64 and 66-68 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 35, 55 and 62, the steps or structure presented are insufficient to perform the intended process. The claim preambles set forth that the process is either one in which a risk of flammability of the mixture or the order in which the reactive gases are mixed, yet the steps do not positively recite sufficient steps or structure that the risk of flammability or the mixing order can be determined. In line 5 of claim 35 and line 6 of claim 55 "the ternary diagram" does not have antecedent basis. In claim 37, "comparing one or more mixing times of the mixer or mixers used" does not have proper antecedent basis and creates a question of is this step in addition to the comparison step of claim 35 or trying to further define what constitutes the first transit time. In claim 38, "the mixing time does not have antecedent basis. Additionally in claim 38 "a step of" is awkward since it is separated from the "further comprising" by a large number of words. Claim 40 has the same problem as claim 37. In claim 41, "the composition of one of the mixtures according to one of the modes of injection" and "the modes of injection" do not have proper antecedent basis in claim 35 since there is only one mode of forming the mixture. In claim 42, "the mixing time or times" does not have antecedent basis and claim 35 has only one mixing mode. In claim 43, "the intermediate mixture point" does not have antecedent basis and the claim also has the problems of claim 42. In claims 44 and 54 there is no relationship between the flammability risk of the determining step and the order of mixing used. In claim 45 it is not clear if the claim is limited further than mixing three gases together in a manner that combustion or spontaneous ignition does not occur. For examination purposes, the claim will be treated with this scope. Claim 36 has the problem of claim 42. In claims 46-48 and 51-53, it appears that the claims are not properly dependent upon claim 35 since there does not appear to be an actual mixing that occurs in claim 35. It is not

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clear if claim 59 further limits claim 55 since all elements of claim 59 appear to be present in claim 55.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 45 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Yoshikawa. In the paper and abstract Yoshikawa discusses an expert system for prediction of safety in manufacture of a mixture of gases. Physical and chemical properties of many gases were stored in a computer as a database for the expert system. The system first checks the concentration of each gas to be mixed. If it is beyond the safety limit, the manufacture of the mixture is rejected. The reactivity of each gas is checked and if any of the gases react with each other, the gas mixture can be manufactured and a message is displayed. The explosion limit of the mixture is examined. The system also provides the order of addition of gases to a container, method of analysis, and pressure of the mixed gases.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 55 and 59-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshikawa as applied to claim 45 above, and further in view of Clark. Figures 9-13 of

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Yoshikawa show displays that appear to have ternary like diagrams on them however, due to the paper being in Japanese, it is not currently possible to determine if Yoshikawa teaches that ternary diagrams are used in the process.

In the paper Clark discusses process vent collection system safety. To ensure process vent collection system (VCS) safety, proper design and operation begins with considering the system as a unit operation and giving it the same weight as a piece of process equipment. Due to the interconnective nature of VCS, hazards initiated in them can potentially affect >1 unit operation. Administrative, design, and operational recommendations are made to adequately deal with the safety issues such systems present. Topics discussed include: VCS design recommendations; process hazards analysis (ownership and responsibility, process hazards review [PHR], hazards identification, hazards and operability analysis, consequence analysis, change management); understanding flammability (fire triangle, estimating flammability limits, temperature and pressure effects, mists and dusts, flammability diagrams, ignition sources); VCS hazards, reactions, and safety (explosion and flashback, internal and external, exothermic reactions and reactive chemicals); required operating modes (lean operation; inerted operation; interlocks, alarms, and control systems; mixing of streams; using monitors to determine composition, flow-ratio control; flammable sources; arrestor use); recommendations summary; and system-component design considerations (piping, relief-valve discharge, pressure drop, isolation or block valves, low-point drains and knockout pots, arrestors and liquid seals, thermal variation considerations, O and hydrocarbon monitors). Particularly relevant to the instant claims is the discussion relative to understanding flammability starting on page 68. Pages 69-70 show several ternary flammability diagrams and describe how they can be used to determine when or if a mixing process in the VCS enters or crosses the flammability region of the diagrams.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of the ternary flammability diagrams taught by Clark into the expert computer process of Yoshikawa because as shown by Clark they clearly show how the mixing process can show when flammable compositions can be produced during the mixing process.

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7. Applicant's arguments filed June 23, 2003 have been fully considered but they are not persuasive. The new clarity rejections are a result of the claims having been amended causing the examiner to take a closer look at the language. The anticipation rejection is due to the realization that claim 45 covers any process for producing a final mixture of reactive gases in which the mixture does not ignite or explode. In a claim of this scope is a process which inherently meets ternary flammability region requirements because it either does not cross the flammability regions of the ternary diagram or crosses them in a time short relative the the induction time because of the lack of ignition or explosion. Relative to the art rejection, it appears that the paper is a lot closer to the instantly claimed invention since at least figure 9-13 have a display that include a section that appears to resemble a ternary diagram. The article will be submitted for translation so a closer comparison can be made. Since Yoshikawa has a feature that resembles a ternary diagram, it clearly would have been obvious to incorporate them into the device of Yoshikawa for their know benefits as taught by Clark. The remaining claims are not being rejected by art because a translation is not readily available at this time. Examiner reserves the right to revisit this issue with applicant's next response.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional references relate to flammability, flammability diagrams and programs used to model the mixtures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is (703) 308-3989. The examiner's schedule is variable between the hours of about 5:30 AM to about 5:00 PM on Monday through Thursday and alternate Fridays.

For communication by fax to the organization where this application or proceeding is assigned, (703) 305-7719 may be used for official, unofficial or draft papers. When using this number a call to alert the examiner would be appreciated. Numbers for faxing official papers are 703-872-9310 (before finals), 703-872-9311 (after-final), 703-305-7718, 703-305-5408 and 703-305-5433. The above fax numbers will generally allow the papers to be forwarded to the examiner in a timely manner.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



September 5, 2003

ARLEN SODERQUIST
PRIMARY EXAMINER